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10/687,166	10/16/2003	Alexi C. Arango	H-359	6811

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EXAMINER	
LEWIS, DAVID LEE	
ART UNIT	**PAPER NUMBER**
2673	

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/687,166	ARANGO ET AL.	
	Examiner	Art Unit	
	David L. Lewis	2673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 January 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,5,6,8-21,24,25 and 27-49* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5,6,8-21,24,25 and 27-49* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. **Claims 35, 36, 38, 39, and 43-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Batchelder (4418346) in view of Beni et al. (4411495).**

As in claims 35 and 47, Batchelder teaches of a dielectrophoretic display, **column 2 lines 15-28 and 60-65, column 6 lines 45-50**, comprising:

a substrate having walls defining at least one cavity, the cavity having a viewing surface and a side wall inclined to the viewing surface, **figure item 4 item 44, figure 7 item 88, column 6 lines 55-65**; said walls being defined by a gasket to produce a reservoir/cavity.

a suspending fluid contained within the cavity, **column 6 lines 55-65**, **figure 7 item 88**; hepatane and octyl alcohol.

a plurality of at least one type of particle suspended within the suspending fluid, the particles having a first optical characteristic, **column 5 lines 42-63**, **figure 4**

items 38 and 40; said particles being a plurality of water bubbles provided in a said suspending fluild, said water bubbles containing Triton X 100 and Rhodamine (surfactant and fluorescent dye).

a backing member disposed on the opposed side of the cavity from the viewing surface, at least part of the backing member, **column 6 lines 29-31**; said absorbing backing.

means for applying to the substrate an electric field effective to cause dielectrophoretic movement of the particles to the side wall of the cavity, **column 4 lines 9-40**. wherein as shown particles 38 and 40 move in opposite directions towards the wall/gasket portion not shown in figure 4.

Wherein the particle has one optical characteristic (fluorescent due to rhodamine) and the backing member also has an optical characteristic (absorbing, reflecting, transmitting, or scattering), **column 2 lines 25-28, column 6 lines 14-43 and 60-65.**

However Batchelder fails to explicitly teach of said backing member having a second optical characteristic different from the first optical characteristic.

Beni et al. teaches of said absorbing backing member having a specific color, **figure 3 item 27, column 2 lines 55-65, column 3 lines 1-15**, in a display that advances the electrophoretic display technology by replacing the electrophoretic display medium with a liquid crystal display medium.

Wherein given that said backing members are known in the art to have a specific color in contrast to an image color formed by a display medium as taught by Beni, and Batchelder further teaches of having a distinguishable display particle of the fluorescent optical character and a light absorbing display backing, **it would have been obvious to the skilled artisan** at the time of the invention to provide for said absorbing backing member having a second optical characteristic different from the first optical characteristic for the purpose of contrasting an image for display as known in the art and suggested by both Batchelder and Beni, as found in claims 35 and 47.

As in claim **36**, Batchelder teaches of wherein the suspending fluid is substantially uncolored, and has suspended therein only a single type of particle, column 6 lines 58-64.

As in claim 38, Batchelder teaches of wherein the cavity has a non-circular cross-section as seen from the viewing surface, figure 7 item 88.

As in claim 39, Batchelder teaches of wherein the cavity forms a polygonal cross-section as seen from the viewing surface, figure 7 item 88.

As in claim 43, Becker et al. teaches of wherein the substrate comprises at least one capsule wall so that the dielectrophoretic display comprises at least one capsule, figure 7 item 88.

As in claim 44, Batchelder teaches of wherein comprising a plurality of capsules, the capsules being arranged in a single layer, column 5 lines 42-63.

As in claim 45, Batchelder teaches of wherein the substrate comprises a continuous phase surrounding a plurality of discrete droplets of the suspending fluid having the at least one type of particle suspended therein, column 6 lines 55-67, column 4 lines 1-5.

As in claim 46, Batchelder teaches of wherein the substrate comprises a substantially rigid material having the at least one cavity formed therein, the substrate further comprising at least one cover member closing the at least one cavity**, figure 4 and 7.**

2. **Claims 37, 40-42, 48, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Batchelder (4418346) in view of Beni et a. (4411495), further in view of Becker et al. (3960439).**

As in claims 37, 40-42, 48, and 49, Batchelder does not explicitly teach of said particle and drive features.

Becker et al. teaches of said well known drive features in a dielectrophoretic display as claimed, column 3 lines 59-66. Becker et al. teaches of all the elements of claims 35 and 47 and is only silent as to said backing member feature as claimed. **Therefore it would have been obvious** to the skilled artisan at the time of the invention to replace the dielectrophoretic medium of Batchelder in view of Beni et al. with the dielectrophoretic medium of Becker et al., because Becker et al. teaches of an alternative dielectrophroretic display known in the art, which would obviously serve as a design choice to a dieletrophoretic display means.

As in claims 37 and 49, Becker et al. teaches of wherein at least some of the at least one type of particle are electrically charged.

As in claim 40, Becker et al. teaches of wherein the at least one type of particle is formed from an electrically conductive material.

As in claim 41, Becker et al. teaches of wherein the at least one type of particle is formed from a metal or carbon black.

As in claim 42, Becker et al. teaches of wherein the at least one type of particle is formed from a doped semiconductor.

As in claim 48, Becker et al. teaches of wherein the electric field is an alternating electric field, column 11 lines 1-10.

3. **Claims 1, 5-21, 24-35 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bryning et al. (5582700) in view of Ota (3756693).**

As in claim 1, Bryning et al. teaches of a dielectrophoretic display comprising: a substrate having walls defining at least one cavity, **figure 1 item 10,**

the cavity having a viewing surface and a side wall inclined to the viewing surface, **figure 1 item 14 and 17**;

a suspending fluid contained within the cavity, **figure 1 item 28**;

a plurality of a first type of particle suspended within the suspending fluid the first type of particle having a first optical character and a first electrophoretic mobility, **figure 1 item 24/26, column 6 lines 35-38, column 8 lines 38-65**; fluorescent

1, positively charged particle which moves adjacent and oppositely charged electrode.

a plurality of a second type of particle suspended within the suspending fluid, the second type of particle having a second optical characteristic different from the first optical characteristic, **figure 1 item 24/26, column 6 lines 35-38, column 8 lines 38-65**; fluorescent 2, negatively charged particle which moves adjacent and oppositely charged electrode.

a backing member disposed on the opposed side of the cavity from the viewing surface, at least part of the backing member having a third optical characteristic different from the first and second optical characteristics, figure 7 item 50;

and means for applying to the substrate an electric field effective to cause dielectrophoretic movement of the first and second types of particles to the side wall of the cavity**, column 14 lines 18-25 and 40-55**.

However Bryning does not explicitly teach of a second eletrophoretic mobility different from the first electrophoretic mobility.

Wherein based on the application of an alternating voltage of a specific frequency the polar phase having two oppositely charged particles spreads in a direction to towards the walls 17, as known in the art, as taught by Ota. Further wherein based on the application of a direct voltage the particles move in opposite directions, as known in the art, as taught by Ota. Bryning teaches of mixtures of two or more dyes, of the type having positive and negative charges, wherein the mobility's are reflective of the opposite charge and movement through the suspending fluid to the adjacent electrode. Ota teaches that is well known for such a combination of differently colored oppositely charged electrophoretic particles to have different mobilities.

Therefore it would have been obvious to the skilled artisan at the time of the invention to provide for differently colored oppositely charged electrophoretic particles having different mobilities, because Ota teaches it is well known in electrophoretic display as taught by Bryning, as found in claims 1 and 20.

As in claim 20, Bryning et al. in view of Ota (as applied above to claim 1 for the added elements) teaches of a process for operating a dielectrophoretic display, the process comprising: providing a substrate having walls defining at least one cavity, **figure 1 item 10,**

the cavity having a viewing surface and a side wall inclined to the viewing surface, **figure 1 item 14 and 17**;

a suspending fluid contained within the cavity, **figure 1 item 28**;

and a plurality of at least one type of particle suspended within the suspending fluid, **figure 1 item 26**;

and applying to the substrate an electric field effective to cause dielectrophoretic movement of the particles to the side wall of the cavity, **column 14 lines 18-25 and 40-55**.

Wherein based on the application of an alternating voltage of a specific frequency the polar phase having two oppositely charged particles spreads in a direction to towards the walls 17, as known in the art, as taught by Ota. Further wherein based on the application of a direct voltage the particles move in opposite directions, as known in the art, as taught by Ota. Bryning teaches of mixtures of two or more dyes, of the type having positive and negative charges, wherein the mobility's are reflective of the opposite charge and movement

through the suspending fluid to the adjacent electrode. Ota teaches that is well known for such a combination of differently colored oppositely charged electrophoretic particles to have different mobilities.

Therefore it would have been obvious to the skilled artisan at the time of the invention to provide for differently colored oppositely charged electrophoretic particles having different mobilities, because Ota teaches it is well known in electrophoretic display as taught by Bryning, as found in claims 20.

As in claim 11, Bryning et al. teaches of wherein the cavity has a non-circular cross-section as seen from the viewing surface, figure 1C item 18, figure 7.

As in claim 12, Bryning et al. teaches of wherein the cavity has a polygonal cross-section as seen from the viewing surface, column 11 lines 55-65.

As in claim 13 and 28, Bryning et al. teaches of wherein the at least one type of particle is formed from an electrically conductive material, column 8 lines 45-65.

As in claim 14, Bryning et al. teaches of wherein the at least one type of particle is formed from a metal or carbon black, column 8 lines 45-65.

As in claim 15 and 30, Bryning et al. teaches of wherein the at least one type of particle is formed from a doped semiconductor, column 8 lines 45-65.

As in claim 16, Bryning et al. teaches of wherein the substrate comprises at least one capsule wall so that the dielectrophoretic display comprises at least one capsule, figure 1 item 17.

As in claim 17 and 32, Bryning et al. teaches of comprising a plurality of capsules, the capsules being arranged in a single layer, figure 3 items 12.

As in claim 18 and 33, Bryning et al. teaches of wherein the substrate comprises a continuous phase surrounding a plurality of discrete droplets of the suspending fluid having the at least one type of particle suspended therein, figure 1C item 24.

As in claim 19 and 34, Bryning et al. teaches of wherein the substrate comprises a substantially rigid material having the at least one cavity formed therein, the substrate further comprising at least one cover member closing the at least one cavity, figure 1 items 14 and 16.

As in claim 21, Bryning et al. teaches of wherein the electric field is an alternating electric field, column 14 lines 50-55.

As in claim 29, Bryning et al. teaches of wherein the at least one type of particle is
formed from a metal or carbon black, column 8 lines 45-65.

As in claim 31, Bryning et al. teaches of wherein the substrate comprises at least one capsule wall so that the dielectrophoretic display comprises at least one capsule, figure 3 item 12.

As in claims 35 and 47, Bryning et al. teaches of a dielectrophoretic display, **figure 1 item 10, column 14 lines 18-25 and 40-56**, comprising:

a substrate having walls defining at least one cavity, the cavity having a viewing surface and a side wall inclined to the viewing surface, **figure 1 item 17 and 14**; said walls 17 and said viewing surface 14 or figure 7 item 14.

a suspending fluid contained within the cavity, **figure 1 item 28**; non-polar phase

a plurality of at least one type of particle suspended within the suspending fluid, the particles having a first optical characteristic, **figure 1 item 24/26**; said particles being a represented by the dye 26 dissolved in the polar phase 24, where the dye can be fluorescent.

a backing member disposed on the opposed side of the cavity from the viewing surface, at least part of the backing member having a second optical characteristic different from the first optical characteristic, **figure 7 item 50**. wherein the backing member is reflective.

means for applying to the substrate an electric field effective to cause dielectrophoretic movement of the particles to the side wall of the cavity, **column 7 lines 40-60, column 14 lines 18-25 and 40-55**.

Wherein the particle has one optical characteristic (dyes 26, column 8 lines 45-56, fluorescent) and the backing member also has an optical characteristic

(reflecting mode, nontransparent, reflective), column 7 lines 30-40, column 10 lines 43-46, column 11 lines 33-40.

As in claim 5 and 24, Ota teaches of wherein the first and second electrophoretic mobilities differ in sign, so that the first and second types of particles move in opposed directions in an electric field, column 7 lines 50-65.

As in claim 6, Bryning et al. teaches of wherein the suspending fluid is substantially uncolored, figure 1 item L2, figure 13 item L5.

As in claim 10, Ota teaches of wherein the first and second optical characteristics comprise black and white colors, figure 1 item 6, column 2 lines 60-67, column 7 lines 55-65.

As in claim 7 and 26, Ota teaches of further comprising a backing member disposed on the opposed side of the cavity from the viewing surface, figure 4 item 5, at least part of the backing member having a third optical characteristic different from the first and second optical characteristics, figure 4 items 19 and 20, column 7 lines 55-65. Wherein said particles are black and white, and said substrate is opaque or transparent.

As in claim 25, Ota teaches of further comprising: applying an electric field of a first polarity to the cavity, thereby causing the first type of particles to approach the viewing surface and the cavity to display the first optical characteristic at the viewing surface, figure 4 item 19, column 5 lines 3-16, column 7 lines 55-63;

and applying an electric field of a polarity opposite to the first polarity to the cavity, thereby causing the second type of particles to approach the viewing surface and the cavity to display the second optical characteristic at the viewing surface, figure 4 item 20, column 5 lines 3-16, column 7 lines 55-63.

As in claim 8, 9, and 27, Bryning et al. is silent as to wherein the backing member comprises areas having third and fourth optical characteristics different from each other and from the first and second optical characteristics. However said variations represent known design choices to providing color displays as known in the art. Ota teaches of varying the color scheme, column 3 lines 10-50, column 7 lines 55-65, wherein said claims limitations would have been an obvious design choice in view of Ota, as found in claims 8, 9, and 27.

Response to Arguments

4. Applicant's arguments, see Amendment, filed 11/17/2005, are not persuasive. Applicant argues Bryning does not disclose any fluid containing particles which undergo dielectrophoretic movement, as required by all the claims. Said non-polar phase is the fluid which is combined in a cell with a polar phase 24 said particles being a represented by the dye 26 dissolved in the polar phase 24, where the dye can be fluorescent. The dielectrophoretic movement takes place as a result of the alternating electric field applied to the charged particles. Bryning teaches of mixtures of two dyes oppositely charged. The particles move adjacent to the electrodes as well as in a spreading or coagulating pattern. Therefore the electrophoretic display of Bryning reads on the applicants invention. Rejection Maintained. The Sheridon and Double Patenting rejection is withdrawn.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **David L. Lewis** whose telephone number is **(571) 272-7673**. The examiner can normally be reached on MT and THF from 8 to 5. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala, can be reached on **(571) 272-7681**. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571)-273-8300.

7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-

direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner: David L. Lewis

January 18, 2006

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